A. B. DICK.

SHEET FEEDING APPARATUS.

APPLICATION FILED MAR. 2, 1908.

929,292.

Patented July 27, 1909.

3 SHEETS—SHEET 1.

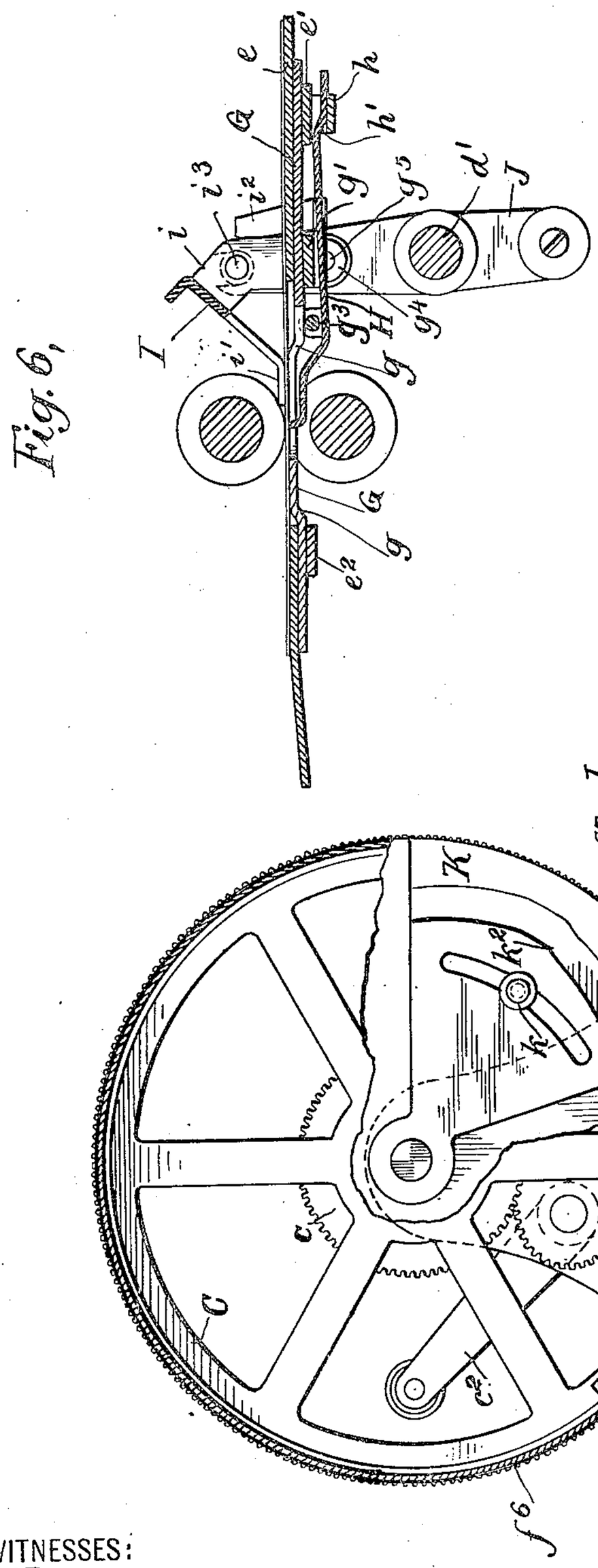

Fig. 6,

Fig. 1,

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3 SHEETS—SHEET 2.

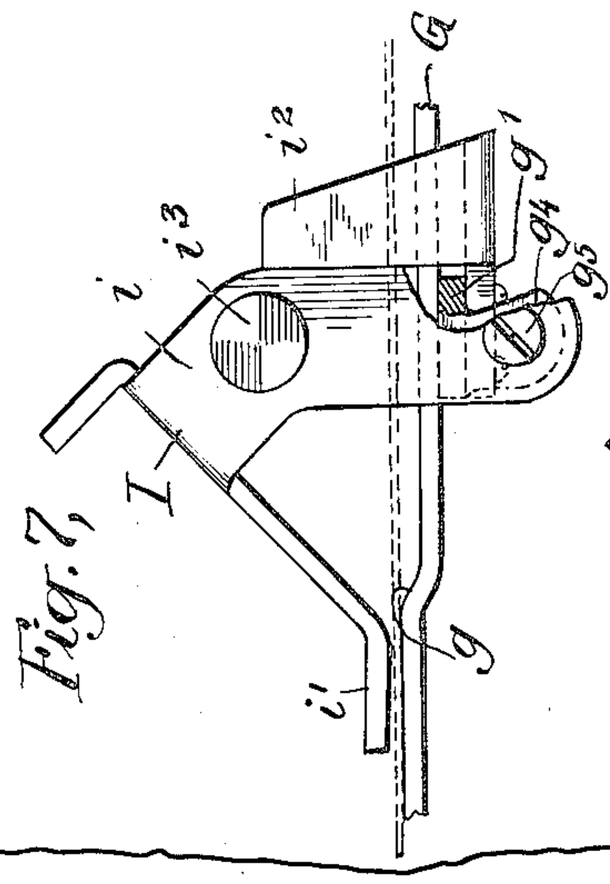

Fig. 7,

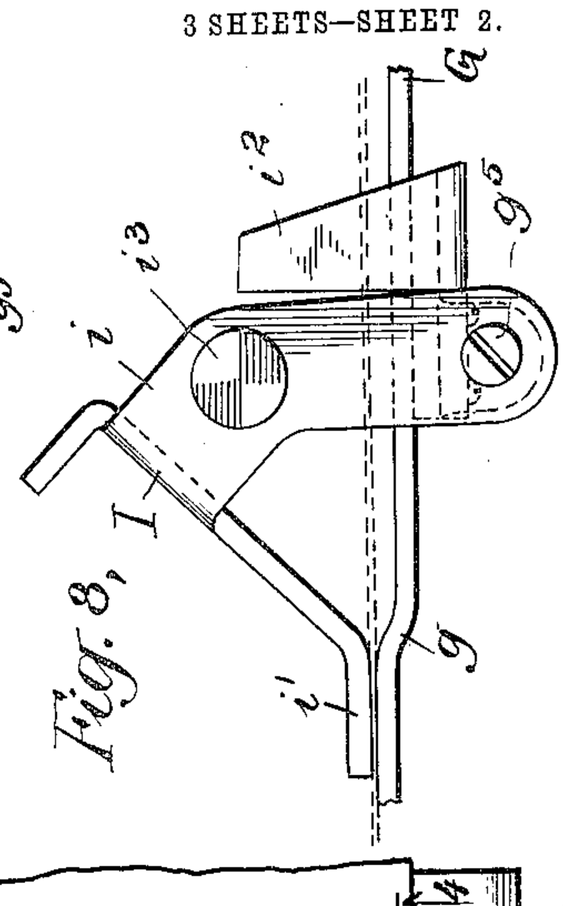

Fig. 8,

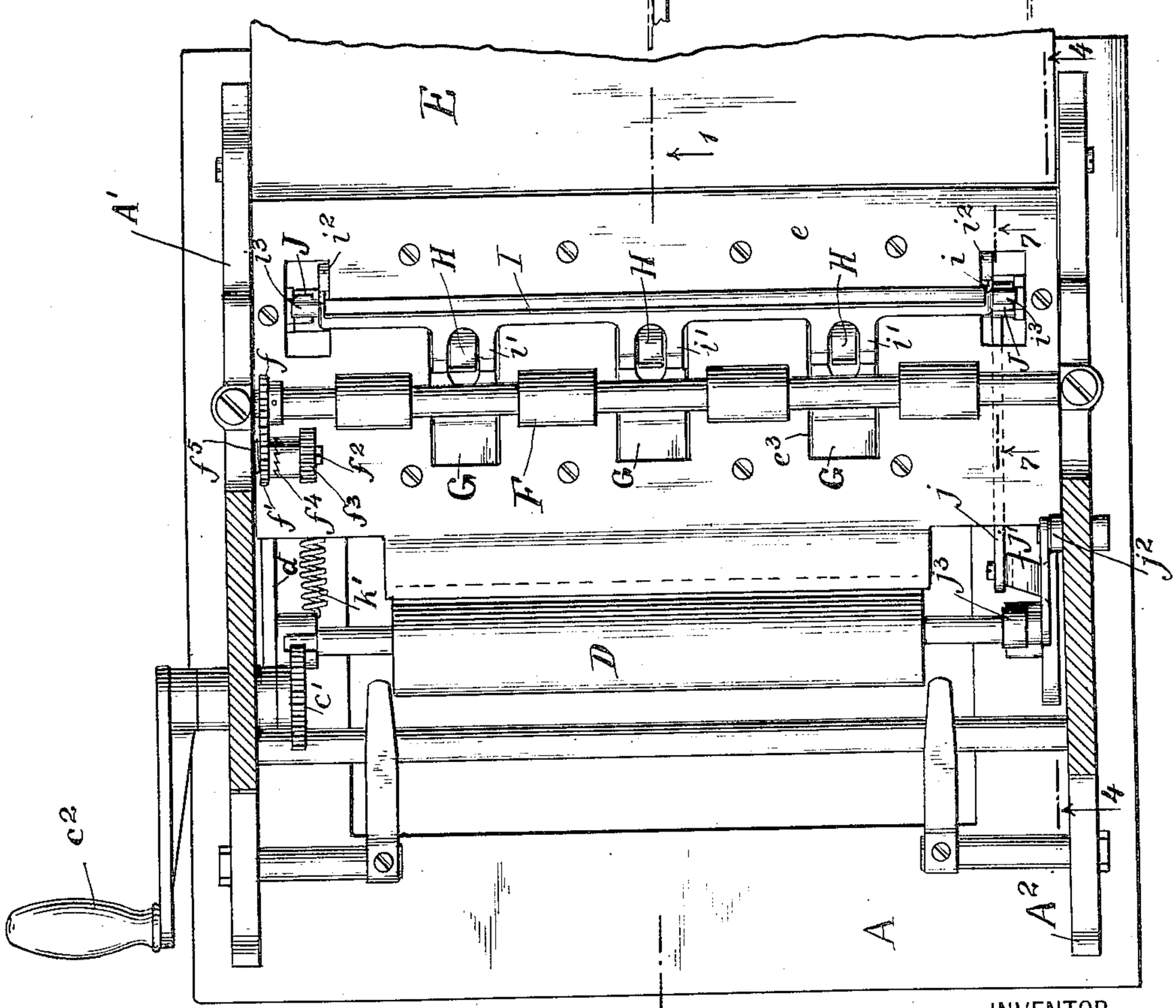

Fig. 2,

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3 SHEETS—SHEET 3.

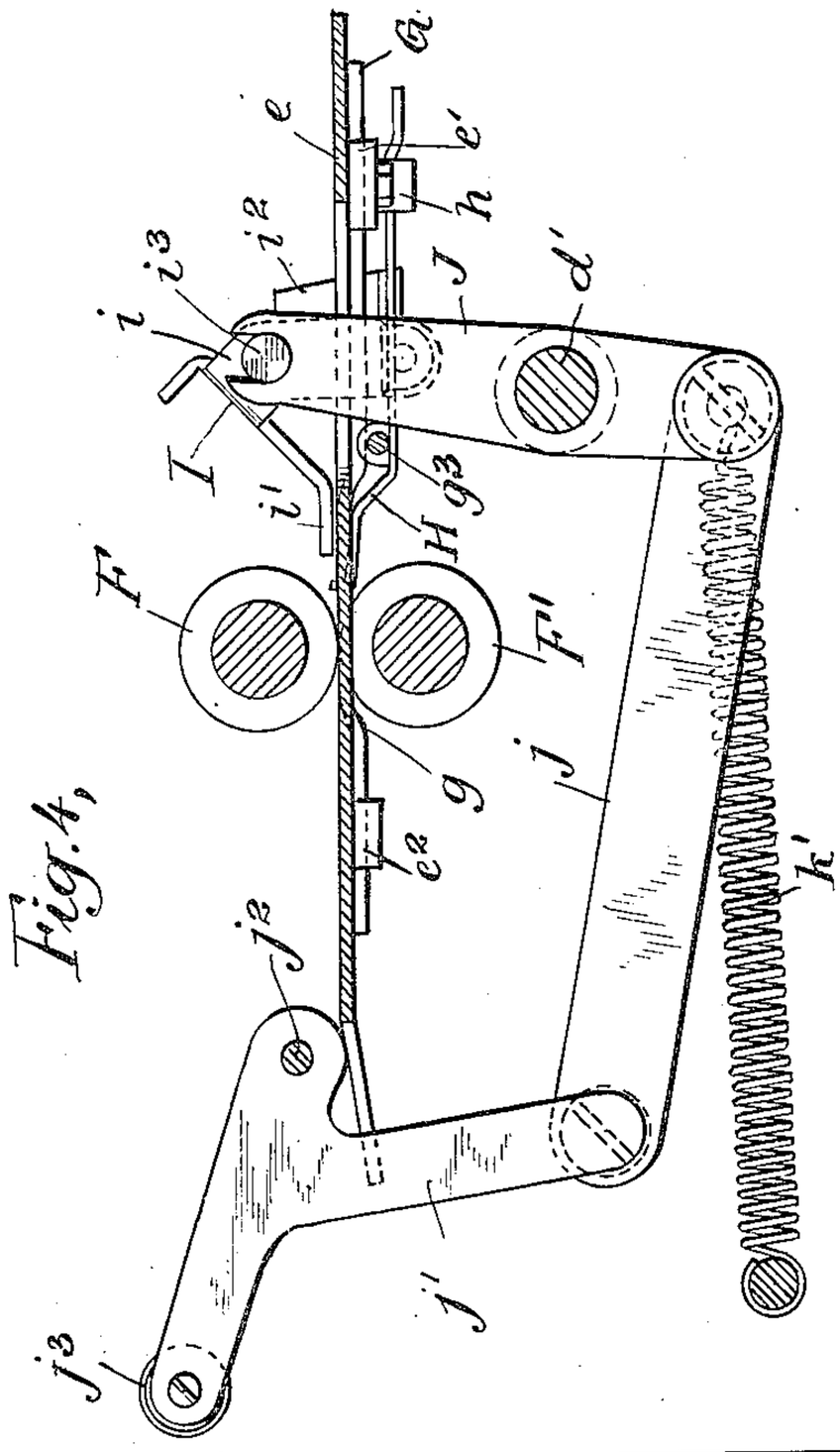

Fig. 4,

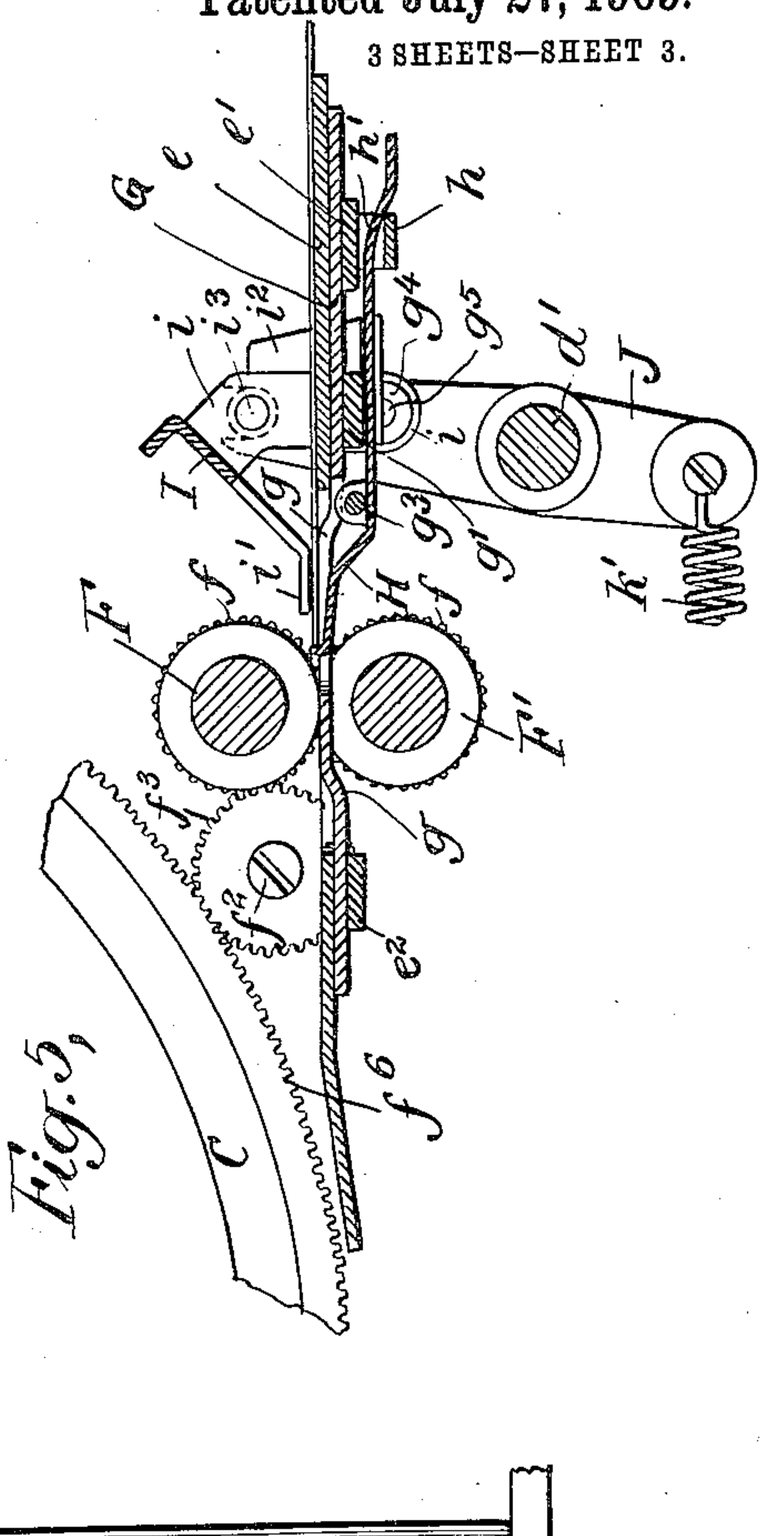

Fig. 5,

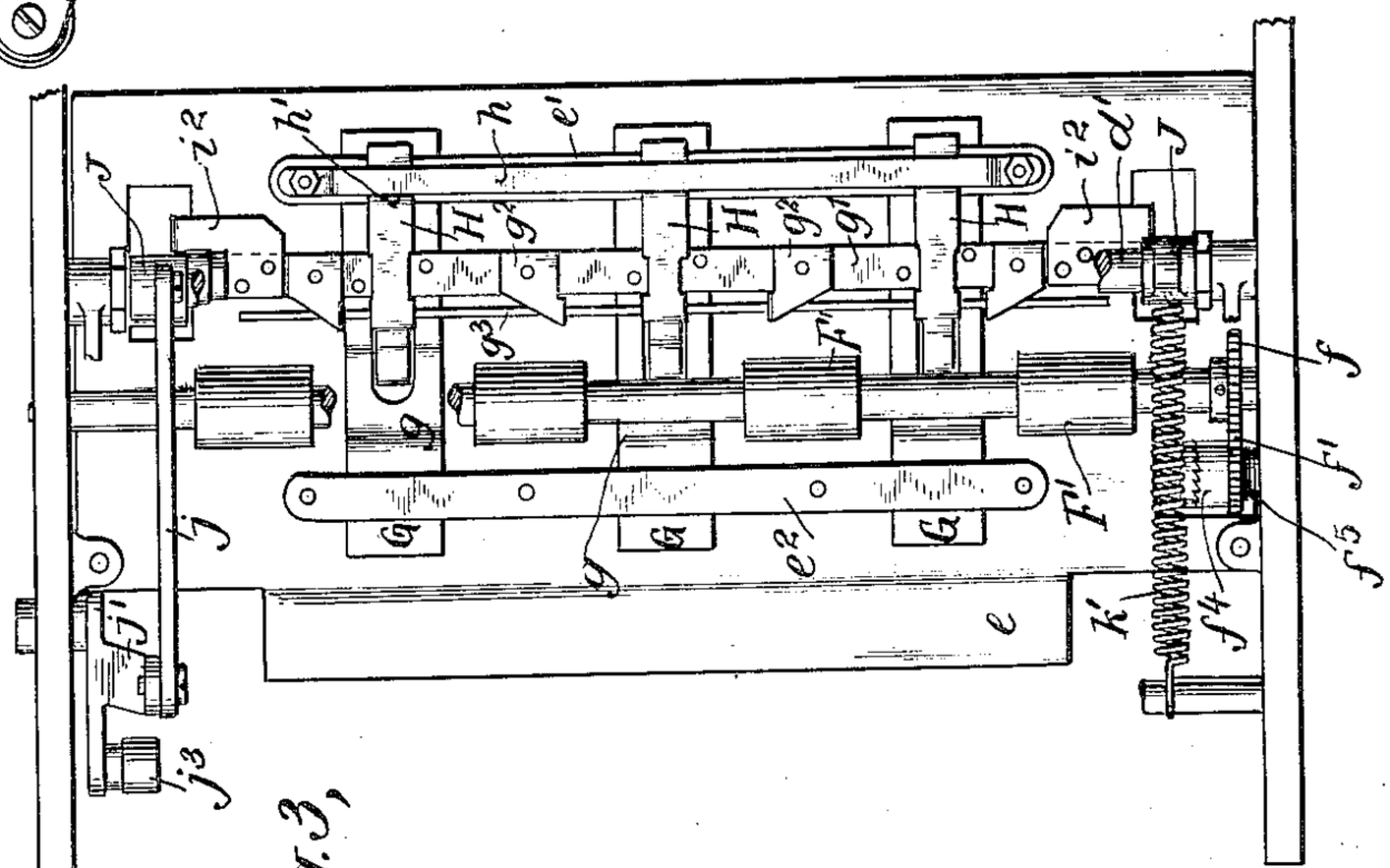

Fig. 3,

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UNITED STATES PATENT OFFICE.

ALBERT B. DICK, OF LAKE FOREST, ILLINOIS, ASSIGNOR TO A. B. DICK COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SHEET-FEEDING APPARATUS.

No. 929,292. Specification of Letters Patent. Patented July 27, 1909.

Application filed March 2, 1908. Serial No. 418,729.

To all whom it may concern:

Be it known that I, ALBERT B. DICK, a citizen of the United States, residing at Lake Forest, in the county of Lake and State of Illinois, have invented a certain new and useful Improvement in Sheet-Feeding Apparatus, of which the following is a specification.

This invention relates to sheet-feeding apparatus for feeding sheets of paper or other material successively to any suitable device, such, for instance, as a printing machine or folding machine.

The invention is of particular utility in connection with stencil-duplicating apparatus, but is in no way limited in this respect.

The object of the invention is to provide an improved form of sheet-feeding apparatus which is simple in construction and reliable and efficient in operation, with which the time of feeding the sheets to the device which is to act thereon may be adjusted as desired and the feed of the sheets at other than the proper times precluded, and by which the sheets are fed to the device in such manner that they will be acted on properly thereby, as by receiving the impression or fold in the desired relation to the edges of the sheet.

The invention involves the provision of a sheet-feeding device preferably operating continuously to feed sheets successively, and a means coacting therewith for controlling the forwarding of sheets to such device. The sheet-feeding device preferably consists of a pair of rollers between which the sheets are passed and in a stencil-duplicating machine these are arranged adjacent to the line of coaction of the stencil-drum and the pressure roller. The means controlling the forwarding of the sheets to these rollers is preferably arranged to effect the forwarding of the sheets to the rollers and for this purpose, is given a reciprocatory motion and is provided with parts adapted to engage the sheets. Thus, gripper jaws may be employed mounted above and below the path of the sheets and these may be moved relatively to cause them to grip a sheet between them and then moved together bodily to forward the sheet to the sheet-feeding rollers. Preferably, these rollers are of sectional form and the gripper-jaws are arranged to enter the spaces between the sections of the rollers and then release the sheet so that the movement of the sheet effected by the gripper is continued by the rollers. The time of the movement of the reciprocating forwarding means is made adjustable with respect to the movement of the parts of the duplicating or folding machine so that the position of the impression or folds on the sheet may be regulated as desired. Also stops or other suitable devices are employed, preferably on the gripper-jaws or other forwarding means which prevent the passage of the sheets to the feeding rollers at other than the proper times.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of a stencil-duplicating machine provided with my improved sheet-feeding apparatus, the section being on line 1—1 of Fig. 2; Fig. 2 is a horizontal section, with the stencil-carrying drum removed, the line of the section being indicated by the line 2—2 of Fig. 1; Fig. 3 is a bottom view of the sheet-feeding apparatus; Fig. 4 is a detail view in section on line 4—4 of Fig. 2; Figs. 5 and 6 are transverse sections of the sheet-feeding apparatus showing two positions thereof, and Figs. 7 and 8 are detail views of a portion of the sheet-feeding apparatus on line 7—7 of Fig. 2, showing two positions of these parts.

Referring to these drawings, the machine consists of a base A, on which are mounted side-frames A′, A². The stencil-carrying drum C is mounted for rotation in bearings formed in these side-frames, and has a gear *c* fixed to its shaft and meshing with a pinion *c′* secured on a stub-shaft mounted for rotation in the side-frame A′ and carrying an operating handle *c²*. The stencil-carrying drum C is provided with the usual foraminated cylindrical surface, over which an inking pad and a stencil-sheet may be secured, and coacting with this drum is a pressure-roller D mounted for rotation below the drum in arms *d* loosely mounted upon a rod *d′* extending between the side-frames and rotatable in bear-

ings formed therein. The ends of the arms d are curved downwardly as shown in Fig. 1, to coact with cams d^2 mounted upon a shaft d^3 which is provided with a suitable operating handle, whereby the arms d may be turned about shaft d' to carry the pressure-roller D to inoperative position with respect to the stencil-carrying drum.

A feed-board E is mounted upon the side-frames, and a metallic plate e is similarly mounted with its upper surface in the same plane as that of the feed-board E, this plate e extending close to the line of coaction of the stencil-carrying drum and the pressure-roller.

F and F′ indicate two sheet-feeding rolls, which are mounted for rotation one above and the other below the upper surface of plate e. These rolls are preferably provided with a plurality of portions of reduced diameter, so as to form corresponding sections in the rolls, as shown in Figs. 2 and 3, and the plate e is provided with openings through which the sections of the lower roll F′ extend, the upper surface of the sections of this roll being flush with the surface of the plate e. Rolls F and F′ are provided with gears f at one end, which intermesh, so that the two rolls rotate in unison. The gear f on roll F also meshes with a gear f' mounted on a stub-shaft f^2; a gear f^3 is also mounted on this stub-shaft and is connected to the gear f' by a clutch f^4; a spring f^5 being arranged to press the gear f' and one member of the clutch axially of shaft f^2 to hold the two members of the clutch in engagement. The gear f^3 meshes with a gear f^6 mounted upon the shaft of the stencil carrying drum C or formed upon one of the end members of the drum. By this construction, the two sheet-feeding rolls F, F′ are rotated continuously when the stencil-carrying drum C is rotated, and the gearing between these parts is such that the surface speed of the rolls F, F′, is the same as that of the stencil-carrying drum; the clutch f^4, however, permits the sheet-feeding rolls F, F′ to be rotated in one direction independently of the rotation of the stencil-carrying drum C whenever such independent rotation is necessary. Preferably, provision is made for slight relative movement of the rolls F and F′, and the ends of the roll F are, therefore, carried by bearing-blocks which may move vertically in suitable guideways formed in the side-frames A′, A². Springs f^7 are arranged in these guideways to press the bearing-blocks downwardly and hold roll F yieldingly in engagement with roll F′.

Secured to the under side of the plate e and spaced apart by a short distance from the underside thereof, are two strips e' and e^2, and between these two strips the plate e is provided with a plurality of rectangular openings e^3 (Fig. 2). The strips e' and e^2 and the plate e serve to position a plurality of plates G corresponding in number to the openings e^3, the ends of these plates passing between the strips e', e^2 and the plate e; intermediate its ends, each plate G is bent as indicated at g so that the upper surface of the portion of the plate lying between these two bends is flush with the upper surface of the plate e and these portions of the plates G form the lower gripper-jaws of the sheet-forwarding means. Each of the plates G is secured to a strip g', so that all of the plates move back and forth together. A plurality of supports g^2 are also secured to the strip g', and these supports carry a rod g^3 lying parallel to the strip g'. In each of the plates G is an opening, into which extends one end of a finger or stop H, this stop being pivotally mounted upon the rod g^3. The other end of each of the stops H extends between the strip e' secured to the bottom of the plate e and a strip h also secured to the bottom of the plate e, this strip being spaced apart from the strip e', as shown in Figs. 6 and 7. In each of the stops H, adjacent to its rear end, is a bend, as shown at h', so that movement of the stop with strip g' and relatively to strip h, causes the stop to be rocked upon the rod g^3 as a pivot. One position of the stop is shown in Fig. 6, and the other position in Fig. 5, the movement of the stop from the position shown in Fig. 6 to that shown in Fig. 5 being effected by gravity, since the portion of the strip on the right of the rod g^3 on which it is pivotally supported, is of greater weight than the portion on the left. The end of each of the stops H extending through the opening in the gripper-jaw G corresponding thereto is bent at a right angle to the body of the stop, and when the stop is in the position shown in Fig. 6 this upwardly-turned end lies below the upper surface of the gripper-jaw G and the plate e. When the stop has been moved to the position shown in Fig. 5, this upwardly-turned end extends above this surface.

The ends of the strip g' which carries the gripper-jaws G and the stops H, are turned downwardly, as shown at g^4, and are pivotally connected on a horizontal axis by pivot-pins g^5 to downwardly-extending arms i at the ends of an upper gripper-plate I. This plate I is provided with a plurality of gripper-jaws i' corresponding in number and position to the lower gripper-jaws G, each of these upper gripper-jaws directly overlying one of the lower gripper-jaws and having the central portion overlying the stop H of the lower gripper-jaw cut away as shown in Fig. 2. The body of the plate I is disposed at an incline as shown, and the gripper-jaws i' extend downwardly therefrom and then in a horizontal direction. Secured to the strip g' at each of the ends thereof, is a stop-plate i^2, which extends upwardly from the strip

and lies directly in rear of the arm i at the end of the plate I.

Each of the arms i on the plate I is provided with a pintle i^3, these pintles being received in notches formed in the upper ends of levers J secured upon the rod d'. One of these levers is extended below the rod d' and is connected by a link j to one end of a bell-crank lever j' pivotally mounted at j^2 upon the side-frame A^2. The other end of the bell-crank lever j' carries a roller j^3, which is adapted to enter a cam-groove formed in a cam K secured to one end of the stencil-carrying drum C. This cam is adjustable about the axis of drum C and may be locked in any adjusted position by means of a set-screw k passing through an arc-shaped slot in the cam and into a threaded opening in the head of the drum. The other lever J is extended below rod d' and has one end of a coiled spring k' connected thereto, the other end being connected to the frame A'.

The operation of the machine will now be described. The drum C is rotated by means of the operating handle c^2, and the gear f^6 on the drum operates by means of the gearing f^3, f', f, to cause simultaneous rotation of the feeding-rolls F, F', the surface speed of these rolls being the same as that of the drum C. With the parts of the sheet-gripping and forwarding means in the positions shown in Figs. 1, 5 and 7, a sheet of paper is placed upon the feed-board E and moved forwardly thereon until its forward edge passes under the ends of the upper gripper-jaws i' and into engagement with the upwardly-turned ends of the stops H, which arrest the forward movement of the sheet. Then, as the rotation of the drum continues, the cam K comes into engagement with the roller j^3 on the bell-crank lever j', turns that lever on its pivot j^2 and operates through the link j to rock the rod d' in its bearings and thereby move the pintles i^3 to the left in Figs. 1, 4 and 5. The first portion of this movement of levers J and pintles i^3 causes plate I to turn about the pivots g^5 until the gripper-jaws i grip the forward edge of the sheet between them and the lower gripper-jaws G. This movement will be best understood from a comparison of Figs. 7 and 8 which show plate I in these two positions and from which it will be seen that the plate has turned about the pivots g^5 to bring gripper-jaws i' down upon the sheet overlying the lower gripper-jaws G and to carry the rear edges of arms i away from the forward edges of the stops i^2 mounted on strip g'. When this occurs, further turning movement of plate I is precluded and the continued movement of pintles i^3 causes plate I and strip g' and all the parts connected to the strip to be moved with pintles i^3 to the left in Figs. 4 and 5, thus forwarding the sheet with the grippers. This movement causes the bent portions h' of the stops H to come into engagement with the strip h and operates to rock the stops upon the rod g^3 until the upwardly-turned ends thereof move downwardly below the upper surface of gripper-jaws G and plate e. After this has taken place, the forward edge of the sheet carried by the grippers reaches the sheet-feeding rollers F, F', and is fed thereby to the drum C and pressure-roller D. Just as the edge of the sheet comes into coaction with rollers F, F', the roller j^3 on bell-crank j' passes the turning point in the groove in cam K indicated at k^2 in Fig. 1 and the pintles i^3 begin to move to the right in Figs. 2, 4 and 8. The first portion of this backward movement of the pintles turns plate I about the pivots g^5 the slight amount necessary to raise the gripper-jaws i' from the Fig. 8 to the Fig. 7 position, so that the sheet is immediately released by the grippers to allow rollers F, F' to feed the sheet forward. This turning movement of plate I brings arms i into engagement with stops i^2 which prevent further turning movement and then the plate, strip g' and the lower gripper-jaws fixed to the strip move back together to their original position. In this backward movement, strip h permits the stops H to be turned by gravity back to the positions in which their upwardly turned ends extend above the upper surface of the feed-board; these ends are thus returned immediately to the positions in which they act as stops limiting the forward movement of an impression sheet over the feed-board, and this quick return permits of placing another impression sheet in position for feeding into the machine immediately after the sheet first placed in position has been passed to the drum. The rollers F, F' thus constitute a sheet-feeding device arranged adjacent to the line of coaction of the members of the printing couple and operating continuously to feed sheets successively thereto, the forwarding of these sheets to the rollers being controlled by the stops and grippers. The grippers engage the sheets and effect the forwarding of them to the sheet-feeding device, these grippers being given a reciprocating movement for this purpose.

By varying the time of the forward movement of the grippers with respect to the rotation of the stencil-carrying drum, the position of the impression on the sheets may be adjusted as desired and such variation may be effected by moving cam K to different positions about the axis of the drum and then locking it by set-screw k. The shape of cam K and the mechanism for effecting the relative movement of the grippers is such that when the forward edge of a sheet reaches the feed-rollers, the sheet is quickly released so that it may be fed along without interference from the grippers and the return of the grippers and stops to normal

position is quickly accomplished so that they are in that position in ample time to coact with the next sheet to be moved forward over the feed-board.

Having described my invention what I claim as new therein and desire to secure by Letters Patent of the United States is:

1. Sheet-feeding apparatus comprising the combination of a rotary member, a pair of sheet-feeding rollers, means for rotating said rollers and said member at the same surface speed, means for controlling the forwarding of sheets to said rollers, means for reciprocating said controlling means in correspondence with the rotation of said member, and means for adjusting the time of the reciprocation of said controlling means with respect to the rotation of said member, substantially as described.

2. Sheet-feeding apparatus comprising the combination of a rotary member, a pair of sheet-feeding rollers one of which has portions of reduced diameter therein to form sections in the roller, means for rotating said rollers and said member at the same surface speed, means for controlling the forwarding of sheets to said rollers, means for reciprocating said controlling means and causing it to enter between the sections of said roller in correspondence with the rotation of said member, and means for adjusting the time of the reciprocation of said controlling means with respect to the rotation of said member, substantially as set forth.

3. The combination of a printing couple, means for rotating one of the members of the couple, a pair of sheet-feeding rollers adjacent to the printing couple, means for rotating said rollers at the same surface speed as said member of the couple, a feed-board extending in proximity to said rollers and upon which a sheet is laid, a pair of gripper-jaws, means for moving said jaws relatively to cause them to grip a sheet, means for reciprocating said grippers to forward a sheet between said rollers, a reciprocating stop and means for moving the stop to operative and inoperative position, substantially as set forth.

4. Sheet-feeding apparatus comprising the combination of a rotary member, a pair of sheet-feeding rollers, means for rotating said rollers and said member, means for forwarding sheets to said rollers, means for reciprocating said forwarding means in correspondence with the rotation of said member, and means for adjusting the time of the reciprocation of said forwarding means with respect to the rotation of said member, substantially as described.

5. The combination of a printing couple, means for rotating one of the members of the couple, a pair of sheet-feeding rollers adjacent to the printing couple, one of which has portions of reduced diameter therein to form sections in the roller, means for rotating said rollers at the same surface speed as said member of the couple, a feed-board, gripper-jaws, means for operating said gripper-jaws to grip a sheet upon said board and forward it between said rollers, a stop pivotally mounted upon one of said gripper-jaws, and means for turning said stop relatively to said gripper-jaw, substantially as set forth.

6. Sheet-feeding apparatus comprising the combination of a rotary member, a pair of sheet-feeding rollers one of which has portions of reduced diameter therein to form sections in the roller, means for rotating said rollers and said member, means for forwarding sheets to said rollers, means for reciprocating said forwarding means in correspondence with the rotation of said member, and causing the same to enter between said sections of said roller, and means for adjusting the time of reciprocation of said forwarding means with respect to the rotation of said member, substantially as set forth.

7. Sheet-feeding apparatus comprising the combination of a rotary member, a pair of sheet-feeding rollers, means for rotating said rollers and said member, means for forwarding sheets successively to said rollers, means for operating said forwarding means to grip a sheet, forward it to said rollers and then release the sheet in correspondence with the rotation of said member, and means for adjusting the time of the reciprocation of said forwarding means with respect to the rotation of said member, substantially as set forth.

8. The combination of a printing couple, means for rotating one of the members of the couple, a pair of sheet-feeding rollers adjacent to the printing couple, one of which has portions of reduced diameter therein to form sections in the roller, means for rotating said rollers, a feed-board, gripper-jaws, means for operating said jaws to cause them to grip a sheet, move forward between the sections of said roller, release the sheet, and then return to initial position, a movably mounted stop for arresting a sheet in position for coaction with said gripper-jaws, and means for automatically moving said stop to inoperative position during the forward movement of said gripper-jaws, substantially as set forth.

9. Sheet-feeding apparatus comprising the combination of a rotary member, a pair of sheet-feeding rollers one of which has portions of reduced diameter therein to form sections in the roller, means for rotating said rollers and said member, means for forwarding sheets to said rollers, means for operating said forwarding means to grip a sheet, forward it to said rollers and then release the sheet in correspondence with the rotation of said member, said forwarding means entering between the sections of said roller in forwarding a sheet thereto, and means for adjusting

the time of operation of said forwarding means with respect to the rotation of said member, substantially as set forth.

10. Sheet-feeding apparatus comprising the combination of a rotary member, a pair of sheet-feeding rollers, means for rotating said member and said rollers, sheet-forwarding means, means for operating said forwarding means in correspondence with the rotation of said member to grip a sheet, forward the same to said rollers and release the sheet, and means for adjusting the time of operation of said forwarding means with respect to the rotation of said member, substantially as described.

11. The combination of a printing couple, means for rotating one of the members of the couple, a pair of sheet-feeding rollers adjacent to the printing couple, means for rotating said rollers at the same surface speed as said member of the couple, a feed-board extending in proximity to said rollers and upon which a sheet is laid, a stop for positioning a sheet upon said feed-board, means for moving said stop to inoperative position, means for gripping a sheet lying upon said board and forwarding it to said rollers, and means for reciprocating said forwarding means, substantially as set forth.

12. Sheet-feeding apparatus comprising the combination of a rotary member, a pair of sheet-feeding rollers, means for rotating said rollers and said member, a stop for arresting a sheet, means for moving said stop to inoperative position, means for forwarding sheets to said rollers, means for reciprocating said forwarding means in correspondence with the rotation of said member, and means for adjusting the time of the reciprocation of said forwarding means with respect to the rotation of said member, substantially as set forth.

13. The combination of a printing couple, means for rotating one of the members of the couple, a pair of sheet-feeding rollers adjacent to the printing couple one of which has portions of reduced diameter therein to form sections in the roller, means for rotating said rollers at the same surface speed as said member of the couple, a stop for positioning a sheet, means for moving said stop to inoperative position, a pair of gripper-jaws, and means for operating said jaws to grip a sheet, move forwardly to carry the sheet past said stop until said jaws project between said sections and then release the sheet, substantially as set forth.

14. Sheet-feeding apparatus comprising the combination of a rotary member, a pair of sheet-feeding rollers one of which has portions of reduced diameter therein to form sections in the roller, means for rotating said rollers and said member, a stop for positioning a sheet, means for moving said stop to inoperative position, a pair of gripper-jaws, means for operating said jaws in correspondence with the rotation of said member to grip a sheet, move forwardly to carry the sheet past said stop until said jaws project between said sections and then release the sheet, and means for adjusting the time of operation of said forwarding means with respect to the rotation of said member, substantially as set forth.

15. Sheet-feeding apparatus comprising the combination of a sheet-feeding device for feeding sheets successively, sheet-forwarding means, a feed-board extending in proximity to said sheet-feeding device and upon which the sheets are laid successively, a stop for positioning the sheets laid upon said board, means for operating said forwarding means to grip a sheet lying upon said board, forward it to the sheet-feeding device and then release the sheet, and means for moving said stop to inoperative position to permit a sheet to pass it, substantially as described.

16. Sheet-feeding apparatus comprising the combination of a pair of sectional sheet-feeding rollers, means for rotating the same, sheet forwarding means, a feed-board extending in proximity to said rollers and upon which the sheets are laid successively, a stop for positioning the sheets laid upon said board, means for operating said forwarding means intermittently to grip a sheet lying upon said board, move forward between the sections of said rollers to carry the sheet between the rollers, release the sheet and then return to initial position, and means for moving said stop to inoperative position to permit a sheet to pass it, substantially as described.

17. Sheet-feeding apparatus comprising a feed-board over which sheets are fed successively, two gripper-jaws, a stop movably mounted upon one of said gripper-jaws and adapted to coact with the forward edge of a sheet fed over said board to position the sheet upon the board, means for moving one of said gripper-jaws to grip a sheet between them, means for moving said stop relatively to the jaw on which it is mounted to carry it out of the path of movement of a sheet and allow the sheet to pass beyond it, and means for moving said gripper-jaws to forward the sheet, substantially as set forth.

18. The combination of two cylindrical members disposed parallel and adjacent to each other, a feed-board over which sheets are fed successively extending adjacent to the line of coaction of said members, two gripper-jaws, a pivotal connection between said jaws, a stop adapted to coact with the forward edge of a sheet fed over said board to position the sheet upon the board, means for moving the stop relatively to the gripper-jaws to carry it to inoperative position, means for turning the two gripper-jaws relatively about said connection to cause them to grip

a sheet, and means for moving both gripper-jaws to forward the sheet from its position upon said board until its edge passes between said members, substantially as set forth.

19. Sheet-feeding apparatus comprising the combination of a feed-board over which sheets are fed successively, two sectional sheet-feeding rollers adjacent thereto, two gripper-jaws located one above and the other below the surface of said board, a pivotal connection between the two gripper-jaws, a member connected to one of said gripper-jaws, and means for operating said member to turn said gripper-jaws relatively about the pivotal connection between them and then move them together to carry them between the sections of said rollers, substantially as described.

20. Sheet-feeding apparatus comprising the combination of a feed-board over which sheets are fed successively, gripper-jaws, a support pivotally connected thereto, a plurality of stops pivotally mounted on said support, a single means for turning said gripper-jaws and said support relatively and then moving them together, and means for rocking said pivotally-mounted stops on their pivots, substantially as described.

21. Sheet-feeding apparatus comprising the combination of a feed-board over which sheets are fed successively, a gripper-jaw, on one side of the surface of said board, a support on the other side to which said gripper-jaw is pivotally connected, a second gripper-jaw secured to said support, a stop pivotally mounted on said support, a single means for turning said first-named gripper-jaw and said support relatively, and then moving them together, and means for turning said stop on its pivot, substantially as described.

22. Sheet-feeding apparatus comprising the combination of a feed-board over which sheets are fed successively, two sectional sheet-feeding rollers adjacent to said board, two gripper-jaws located one above and the other below the surface of said board, a pivotal connection between said gripper-jaws, means for turning said gripper-jaws relatively about said connection to cause them to grip a sheet between them, and means for moving said gripper-jaws between the sections of said rollers to forward the sheet between the rollers, substantially as described.

23. Sheet-feeding apparatus comprising the combination of a feed-board over which sheets are fed successively, two sectional sheet-feeding rollers adjacent to said board, two gripper-jaws located one above and the other below the surface of said board, a pivotal connection between said gripper-jaws, a member connected to one of said gripper-jaws and means for operating said member to turn the gripper-jaws relatively about the pivotal connection to grip a sheet between them and then move the gripper-jaws together to forward the sheet between said rollers, substantially as described.

24. Sheet-feeding apparatus comprising a feed-board over which sheets are fed successively, two gripper-jaws, a stop movably mounted upon one of said gripper-jaws for positioning a sheet, means for moving one of said gripper-jaws to cause the jaws to grip a sheet between them, means for moving the jaws to forward the sheet, and means actuated in moving the jaws for moving said stop to inoperative position, substantially as set forth.

25. Sheet-feeding apparatus comprising a feed-board over which sheets are fed successively, two gripper-jaws pivotally connected, a stop for positioning a sheet movably mounted on one of said jaws, means for turning the two gripper-jaws relatively about the pivotal connection between them to cause them to grip a sheet, means for moving both gripper-jaws to forward the sheet, and means actuated in moving the jaws for moving said stop to inoperative position, substantially as set forth.

26. Sheet-feeding apparatus comprising a feed-board over which sheets are fed successively, two gripper-jaws, a stop for positioning a sheet, means for moving one of said gripper-jaws to cause the jaws to grip a sheet between them, means for moving the jaws to forward the sheet, and means actuated in moving the jaws for moving said stop to inoperative position, substantially as set forth.

27. Sheet-feeding apparatus comprising a feed-board over which sheets are fed successively, two gripper-jaws pivotally connected, a stop for positioning a sheet, means for turning the two gripper-jaws relatively about the pivotal connection between them to cause them to grip a sheet, means for moving both gripper-jaws to forward the sheet, and means actuated in moving the jaws for moving said stop to inoperative position, substantially as set forth.

28. The combination of a printing couple, means for rotating one of the members of said couple, a pair of sheet-feeding rollers adjacent to the printing couple, means for rotating said rollers at the same surface speed as said member of the couple, a stop for positioning a sheet, reciprocating means for forwarding sheets to said rollers, and means actuated by said reciprocating means for moving said stop to inoperative position, substantially as set forth.

This specification signed and witnessed this 30th day of January, 1908.

ALBERT B. DICK.

Witnesses:
M. H. BURKART,
R. R. HARRINGTON.